- Municipal Water Quality Program
2012- 2013 Workplan

11/8/12

Final

Table 1. Program Element Costs FY 2012-13 (MWQP and SWPCA Funds)

Workplan E	Program Element	Labor PY's	Labor Hours	Labor Cost	Contract/Other Cost	Supplies/Equip	Total Cost	SWPCA Fund	Total Budget
6	**Water Quality Assessment**								
6.1	Grab Samples Collection	**0.9**	**1872**	$129,786			$129,786	$20,000	$149,786
7	**Real Time Water Quality Monitoring**								
7.1	MWQI Real Time Stations	**1.35**	**2808**	$194,679		$401,584	$596,263	$42,780	$639,043
	Field Unit Office Duties	**1.2**	**2496**	$173,048		$10,000	$183,048		$183,048
	Gianelli WQ Station	**0.5**	**1040**	$72,103			$72,103		$72,103
	MWQI-Trends Analysis, modeling and reporting	**0.8**	**1664**	$115,365			$115,365		$115,365
	O & M WQ other duties	**1**	**2080**	$202,550			$202,550		$202,550
7.2	**Real Time Forecasting**								
	BDO-Bay Delta Office-Modeling	**1**	**2080**	$197,974			$197,974		$197,974
	OCO-Operations Control Office Modeling	**1**	**2080**	$222,976			$222,976		$222,976
7.3	**Real Time Data Dissemination**								
	RTDF Data Dissemination & Reporting.	**0.4**	**832**	$57,683			$57,683		$57,683
	Administration and Database Activities							$70,500	$70,500
8	**Special Studies**								
8.1	Urban Sources and Loads	**1.1**	**2288**	$158,627			$158,627	$1,620	$160,247
8.2	NDMA/Crypto/Giardia Study		**0**	$0			$0		$0
8.3	O'Neill Forebay Circulation Study	**0.85**	**1768**	$122,575			$122,575		$122,575
8.4	FDOM Study	**0.05**	**104**	$7,210			$7,210		$7,210
8.5	Spectrofluorometry Study	**0.55**	**1144**	$79,314			$79,314	$6,000	$85,314
8.6	Sacramento WARMF Study	**0.6**	**1248**	$86,524			$86,524		$86,524
8.7	Portable Water Quality Study	**0.3**	**624**	$43,262			$43,262		$43,262
8.8	MWQI Summary Report	**0.7**	**1456**	$100,944			$100,944		$100,944
8.9	Tidal Marsh Report	**0.25**	**520**	$36,052			$36,052		$36,052
8.1	Molecular Characterization of DBP Precursors (	**0.15**	**312**	$21,631			$21,631		$21,631
8.11	2006-2010 Sanitary Survey (Contract & Mgmt)								$0
MWQI-SPC									$0
9	**Emergency Response/Sample Plan**	**0.2**	**416**	$28,841			$28,841	$0	$28,841
10	**Other Water Quality Program Activities**	**0.2**	**416**	$28,841		$13,960	$42,801		$42,801
11	**Program Mngt/Status Reporting**	**1**	**2080**	$144,206			$144,206		$144,206
12	**Misc. Program Costs (Training, travel, TE**	**0.5**	**1040**	$72,103	$92,478	$28,000	$192,581		$192,581
13	**Departmental Support Activities**	**0.4**	**832**	$57,682.56			$57,682.56		57682.56
	Funds not assigned to specific Program Element						$0	59100	$59,100
	Total	**15**	**31200**	**$2,353,978**	**$92,478**	**$453,544**	**$2,900,000**	**$200,000**	**$3,100,000**
	SS consultant costs from 10/11 encumbered funds [7]		**220**	$300,000					$300,000

* Includes contract with San Luis Delta Mendota Water Authority at Jones PP and Maintenance contracts for anion analyzers.

Specific tasks to be implemented using SWPCA Funds TBD

Program Element 6.1: Water Quality Assessment

a. Continue to employ scientific aids for miscellaneous tasks. Annual cost for a scientific aid will be approximately **$20,100.**

Program Element 7.1: Real time monitoring

b. Continue to employ scientific aids for miscellaneous tasks. Annual cost for a scientific aid will be approximately **$20,100.**

c. Reserve **$32,500** for real-time station and special study equipment and/or rental needs.

Program Element 7.3: RTDF-CP Information Dissemination

d. Consultant's time to assist with continuing progress on the RTDF database, updating of the MWQP Website, assisting field staff with remote data relay and assisting with all areas of data management. Annual compensation associated with this task is **$62,400**.

e. Potentially employ scientific aids for miscellaneous tasks. Annual cost for a scientific aid will be approximately **$20,100.**

Program Element 8.1: Urban Sources and Loads Study

f. Potentially employ scientific aids for miscellaneous tasks. Annual cost for a scientific aid will be approximately **$1,620.**

Program Element 8.5: Spectrofluorometer Study

g. Consultant's time for special assignments such as assistance with spectrofluorometer study or collaboration on a paper assessing the impacts of agricultural conversion to urban land use using Staten Island and NEMDC MWQP data. Annual compensation associated with this task is **$6,000.**

Program Element 11: Program Management

h. Costs for semi-annual MWQP offsite meetings. Costs may include rental fees for facility, AV equipment and technical assistance, refreshments, deposit for facilities reservation, and other miscellaneous meeting package elements. Estimated cost for offsite meeting is **$6,000.**

i. MWQP Technical Consultant to provide administrative and technical expertise on program tasks related to water quality assessment, RTDF-related activities, special studies, and serving as a member of the MWQP Technical Advisory Committee. Cost for FY 2011-12 is **$50,000**.

j. All other Program Management expenses including SWC staff services, Legal, and misc. expenses. Annual cost associated with these functions is: **$3,100.**

Table 2. MWQP long-term routine, discrete, sampling stations.

Station #	Stations	WDL Stations (ID)	Analytes Collected	Frequency
1	Natomas East Main Drainage Canal	Natomas EMDC @ El Camino Rd (A0V83671280)	Std. Mineral, nutrients, TOC, DOC, UVA, turbidity, bromide, metals	Monthly
2	American River at EA Fairbairn WTP Intake	American River W.T.P. (A0714010)	Std. Mineral, nutrients, TOC, DOC, UVA, turbidity, and bromide	Monthly
3	Sacramento River at West Sacramento WTP Intake	Sacramento River at W. Sac Intake Structure (A0210451)	Std. Mineral, nutrients, TOC, DOC, UVA, turbidity, and bromide	Monthly
4	Sacramento River at Hood	Sacramento R @ Hood (B9D82211312)	Std. Mineral, nutrients, TOC, DOC, UVA, turbidity, and bromide	Once every two weeks
5	Sacramento River at Mallard Island	Sacramento River @ Mallard Island (E0B80261551)	Std. Mineral, nutrients, TOC, DOC, UVA, turbidity, and bromide	Monthly
6	San Joaquin River near Vernalis	San Joaquin R. nr. Vernalis (B0702000)	Std. Mineral, nutrients, TOC, DOC, UVA, turbidity, and bromide	Once every two weeks
7	Old River at Bacon Island	Old River at Bacon Island (B9D75811344)	Std. Mineral, nutrients, TOC, DOC, UVA, turbidity, and bromide	Monthly
8	Old River at Station 9	Old R. nr. Bryon (st9) (Near HWY 4 Bridge) (B9D75351342)	Std. Mineral, nutrients, TOC, DOC, UVA, turbidity, and bromide	Monthly
9	‡ Banks Pumping Plant at Headworks	Delta P.P. Headworks at H.O. Banks PP (KA000331)	Std. Mineral, Turbidity, UVA, TOC, DOC, Bromide, Total Phosphorous, Total Suspended Solids, Phytoplankton, Purgeable Organics, Taste and Odor, Asbestos, and Radiological, Pesticides and herbicides.	Depending on analyte, Bi-weekly, Monthly, or Quarterly
10	Rock Slough @ DRB (replaces Contra Costa at Rock Slough)	Rock Slough @ Delta Road Bridge (B9D75861372)	Std. Mineral, nutrients, TOC, DOC, UVA, turbidity, and bromide	Monthly
11	Middle River @ Union Point	Middle River A Union Point (B9D75351292)	Std. Mineral, Turbidity, UVA, TOC, DOC, Bromide, nutrients	Monthly
12	Jones Pumping Plant at DMC Headworks	Delta Mendota Canal at Jones Headworks (B9C74701355))	Anions, TOC, DOC	Once every two weeks

13	Gianelli Pumping/Generating Plant	Gianelli WQ Station (ON003050)	Anions, TOC, DOC,	Once every two weeks
14	Colusa Ag Drain near. Sacramento River-Sacramento WARMF station	Ag Drain on Colusa Basin Main Drain (A0294500)	Std. Mineral, nutrients, TOC, DOC, UVA, turbidity, bromide, THMFP/HAAFP, Fluorescence, Suspended Solids	Monthly & Rice Drainage events

‡ Samples collected by DWR's Operations and Maintenance (O&M)

- Physical Parameters collected at all sites: Temperature, pH, Turbidity, Dissolved Oxygen, and Specific Conductance
- Standard Mineral analysis includes: Ca, Mg, Na, K, S, Cl, B, Alkalinity, Nitrate, Dissolved Solids, Specific Conductance
- Standard Nutrient analysis includes: Nitrate + Nitrite, Ammonia, Organic Nitrogen and Ammonia, Total Phosphorus (unfiltered)

Table 3. MWQP discrete sampling stations for short-term modeling studies.

Station #	Stations	WDL Stations (ID)	Analytes Collected	Frequency
15	Shag Sl. @ Liberty Island Sacramento WARMF station	Shag Slough @ Liberty Island Bridge (B9S81841416)	Std. Mineral, nutrients, TOC, DOC, UVA, turbidity, bromide, Suspended Solids, Chlorophyll, CBOD	Monthly/Storm Event
16	North Fork Mokelumne River @ Wimpy's Marina Eastside Streams WARMF station	NF Mokelumne @ Wimpy's Marina (B9D81371295)	Std. Mineral, nutrients, TOC, DOC, UVA, turbidity, bromide, Suspended Solids, Chlorophyll, CBOD, THMFP/HAAFP, Fluorescence	Monthly/Storm Event
17	Calaveras River @ UOP Footbridge Eastside Streams WARMF station	Calaveras River @ Footbridge (B9D75851208)	Std. Mineral, nutrients, TOC, DOC, UVA, turbidity, bromide, Suspended Solids, chlorophyll, CBOD	Monthly/Storm Event

*Samples collected by DWR Division of Integrated Regional Water Management-Northern Region Office

- Physical Parameters collected at all sites: Temperature, pH, Turbidity, Dissolved Oxygen, and Specific Conductance
- Standard Mineral analysis includes: Ca, Mg, Na, K, S, Cl, B, Alkalinity, Nitrate, Dissolved Solids, Specific Conductance
- Standard Nutrient analysis includes: Nitrate + Nitrite, Ammonia, Organic Nitrogen and Ammonia, Total Phosphorus (unfiltered)

Figure 1. MWQP Discrete (“Grab”) & Real time Sampling Locations, FY 2012-13

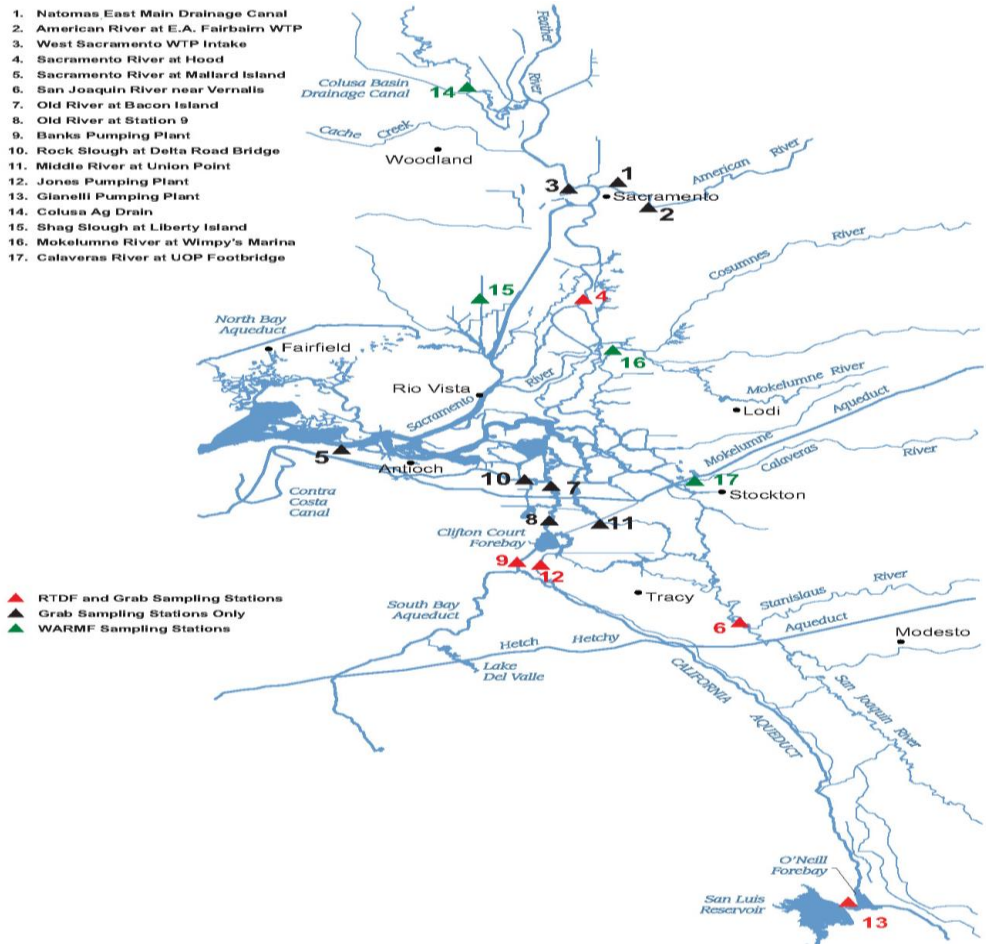

Table 4. Discrete Grab Sample Deliverables and Timelines

Deliverable	Participants	Estimated Start Date	Estimated Completion Date
Records of monthly and bi-weekly, monitoring data.	**MWQP**	na	Currently available upon request
Records of periodic calibration of field monitoring equipment	**MWQP**	na	Currently available upon request
Records demonstrating consistent and timely application of QA/QC procedures	**MWQP**	na	Currently available upon request
Timely analysis and posting of results to the Water Data Library	**MWQP**	na	Monthly Available on-line

na = not applicable or available

Table 5. MWQP Real Time station locations, parameters, and equipment

Station	MWQP Parameters & Instruments	Non-MWQP Parameters
Sacramento River at Hood (HOOD)	TOC, DOC (Sievers 5310-oxidation)	Water: chlorophyll, EC, DO, pH, temperature and turbidity. Atmospheric: solar radiation, temperature, wind speed and direction.
San Joaquin River near Vernalis (VERNALIS)	TOC, DOC (Sievers 5310-oxidation), bromide, chloride, nitrate, sulfate (Dionex ICS-2100)	Water: chlorophyll, DO, EC, pH, river flow and stage, temperature and turbidity.
Delta P.P. Headworks (BANKS)	TOC, DOC (Sievers 5310 oxidation), bromide, chloride, nitrate, sulfate(Dionex ICS-2100)	Water: EC, fluorescence, pH, pump discharge, temperature, turbidity, UVA 254. Atmospheric: temperature, wind speed and direction.
Jones Pumping Plant (JONES)	TOC, DOC, (Sievers 5310–oxidation), bromide, chloride, nitrate, sulfate (Dionex ICS-2100)	Water: EC, pump discharge, temperature.
Gianelli P/G Plant	TOC, DOC (Sievers 5310-oxidation), EC, temp, turbidity, DO, pH (YSI 6600), bromide, chloride, nitrate, sulfate (Metrohm IC 850)	Pumping and Generation discharge

Table 6. Real Time Monitoring Deliverables and Timelines

(Lead organization(s) are shown in bold)

Deliverable	Participants	Estimated Start Date	Estimated Completion Date
Continue operation of automated stations at Hood, Banks, Jones, Vernalis, and Gianelli. Identify critical data gaps.	**MWQP, O&M Water Quality (SS)**	Ongoing	Ongoing
A) As needed, update SOPs documenting maintenance, operation and quality assurance/quality control of all in-situ equipment. **B)** Work towards standardizing, streamlining, and consolidating DWR's in-situ: equipment, data quality control, and data dissemination.	**MWQP/ O&M Water Quality (SS)** **B) MWQP O&M Water Quality (SS)** DPLA IEP	Ongoing Ongoing	**A)** Ongoing **B)** Ongoing
As needed, request SLDMWA staff to repair water system and instrumentation at Jones PP.	**MWQP/SLDMWA**	Ongoing	Ongoing
Installation of real time monitoring instruments at DMC at McCabe Rd. (inlet to O'Neill Forebay).	MWQP	Awaiting contractor decision	Identified by MWQP-TAC as having a low priority compared to Gianelli real-time station. Work on hold pending Gianelli's installation.
A) Gianelli Real-time water quality station. Evaluation Phase, Site preparation, Building installation, providing data on-line to CDEC and MWQP RTDF Water Quality Reports	**O&M Water Quality**/SLFD/ MWQP	**A)**July 2010	**A)** Completed

Deliverable	Participants	Estimated Start Date	Estimated Completion Date
B) Installation of anion analyzer		**B)**May 2012	**B)** Completed
Evaluate the need, and planning for, other installations per the RTDF-CP	**RTDF SC** MWQP TAC	July 2008	Ongoing
Provide readily accessible data and fill in TDS/EC data gaps on pump-in activities. Water data library needs to updated with the data from the contract lab.	**O&M WQ (SS)**	July 2008	Ongoing (TDS data posted on WDL for: Check 13 = KA007089 Check 21 = KA017226 Check 23 = KA019705 Check 29 = KA024454 Check 39 = KA029021 Semitropic 2 = GKA02098 Semitropic 3 = GKA02070 CVC = GKA02380 Kern Water Bank Canal = GKA02382 Arvin Edison Canal = GKA02773), however see Anthony Chu for current TDS status and sampling frequency by station.
Pursue alternative strategies for debris removal at Vernalis station.	**MWQP**	na	Low priority
Long term trends of organic carbon and bromide. **A)** Produce DWR report on organic carbon and bromide long-term trends **B)** Submittal of organic carbon and bromide LT-trends report in peer reviewed journal	**MWQP**	**A)** April 2010 **B)** March 2013	**A)** March 2013 **B)** Dependent on journal revisions.
Feasibility study on portable water quality station	**MWQP**	November 2012	March 2013

na = not applicable or available

Table 7. Example of two subject areas and associated subtasks.

Note that a capability may already exist for some subareas.

Historical, 1990-Present								Short term (2 week) forecasts							
Delta (DSM2) Component				Aqueduct Component				Delta (DSM2) Component				Aqueduct Component			
Hydro-logy	EC	Br	DOC	Hydro-logy	EC	Br	DOC	Hydro-logy	EC	Br	DOC	Hydro-logy	EC	Br	DOC

The Gantt chart is updated each month with the percentage of work completed by BDO, OCO, and MQWP.

Table 8. Deliverables for WARMF Model Development and Staff Training

	WARMF Model Development and Staff Training
Hydraulics	• Assemble measured flow data at Sacramento and San Joaquin Watershed locations **(MWQP)** • Adjust model parameters for hydrologic and hydraulics components**.(BDO)**
EC	Tasks either completed or not scheduled for this workplan cycle.
Bromide	Tasks either completed or not scheduled for this workplan cycle.
DOC	• Assemble measured DOC data at Sacramento and San Joaquin Watershed for the period of 1990-2010 **(MWQP)** • Adjust model parameters for DOC components**.(BDO)**
Tools	• Review comparisons of the computed results at internal and downstream points to assess model validity**.(BDO)** • Report summary findings and recommendations, identifying potential improvements**.(MQWP, BDO)** • Report summary findings and recommendations. **.(MQWP, BDO)** • Develop tools and procedures to extend WARMF forecasting capabilities from 7 days to 21 days**.(OCO)** • Develop tools to extract forecasted DSM2 boundary conditions from WARMF binary file for use in short-term Delta forecasts**.(OCO)**

Yellow highlight =s task completed in 12/13

Table 9 Deliverables for Simulation of Historical Conditions, 1990 – present SHOW EITHER COMPLETED OR SCHEDULED COMPLETION – USE REGULAR DELIVERABLE FORMAT

	Delta (DSM2) Component	Aqueduct Component
Hydraulics	Tasks either completed or not scheduled for this workplan cycle.	Completed
EC	Tasks either completed or not scheduled for this workplan cycle.	Completed
Bromide	Tasks either completed or not scheduled for this workplan cycle.	Completed
DOC	Tasks either completed or not scheduled for this workplan cycle.	Completed
Tools	Document historical simulation of Delta and Aqueduct hydrodynamics/hydraulics, EC, bromide, and DOC **(BDO) 70% complete as of 9/17/2012; Original finished 7/26/2012**	

Yellow highlight =s task completed in 12/13

Table 10. Deliverables for Short-Term Forecast of Water Quality Conditions

	Delta (DSM2) Component	Aqueduct Component
Hydraulics	Completed	Completed
EC	Completed	Completed
Bromide	Complete test of methodology for making short-term forecast of Delta bromide based on simulated EC Complete 7/11/2012**.(BDO)**	Develop method to initialize Aqueduct system bromide **(BDO, MWQP,OCO) Completed** Develop capability for forecasting Aqueduct boundary bromide; Jones and Banks PP bromide provided by Delta forecast simulation **(BDO, MWQP,OCO) Completed**
DOC	Develop capability for establishing initial Delta DOC conditions **(BDO). Pending calibration of WARMF watershed models.**	Develop method to initialize Aqueduct system DOC **(BDO, MWQP**) Develop capability for forecasting Aqueduct boundary bromide; Jones and Banks PP DOC provided by Delta forecast simulation (**BDO, MWQP)** Complete test of methodology for making short-term forecast of Aqueduct DOC **(BDO)**

Yellow highlight =s task completed in 12/13

	Delta (DSM2) Component	Aqueduct Component
Hydraulics	Completed. No further refinements planned	(OCO) 11/19/12-12/14/12
EC	Completed. No further refinements planned	(BDO,DCO 12/17/12-1/11/13
Bromide	Completed. No further refinements planned	(BDO,OCO) 12/17/12-1/11/13
DOC	Completed. No further refinements planned	Not scheduled
Tools	Refine seasonal forecast of Aqueduct system operations **(OCO)** Refine assumptions of EC for Aqueduct inflow for seasonal forecast **(BDO, OCO)** Refine assumptions of bromide for Aqueduct inflow for seasonal forecast **(BDO, MWQP)** Document methodology of producing refined seasonal forecasts of Aqueduct hydraulics, EC, and bromide **(BDO)-2/25/13-3/8/13**	

Table 11. Deliverables for Seasonal Forecasts of Water Quality Conditions

Yellow highlight =s task completed in 12/13

Table 12. Deliverables for Hydrodynamics and Water Quality Simulations of Water Quality Conditions based on CALSIM II planning studies

	Delta (DSM2) Component	Aqueduct Component
Hydraulics	Tasks 1/30/14-4/10/14	Refine assumed project operations **(OCO)** 5/20/13-6/14/13
EC	Tasks 1/30/14-4/10/14	Refine assumed EC assigned to various inflows **(BDO, MWQP)**
Bromide	Tasks 1/30/14-4/10/14	Refine assumed bromide assigned to various inflows **(BDO, MWQP)**
DOC	Tasks 1/30/14-4/10/14	Refine method for generating DOC at Aqueduct system boundaries with Jones and Banks PP DOC provided by Delta simulation (**BDO)**
Tools	Document new/refined capability for producing Delta and Aqueduct hydrodynamics/hydraulics and water quality simulations based on CALSIM II planning studies (**BDO)**	

Yellow highlight =s task completed in 12/13

Table 13. Information Management and Data Dissemination Deliverables and Timelines

(Lead organization(s) are shown in bold)

Task	Participants	Estimated Start Date	Estimated Completion Date
Improve/Upgrade database infrastructure. This task includes:	**MWQP Program**		
A) Import selected contract lab data into the WDL.	**O & M WQ Northern District MWQI Program**	**A)** July 2008	**A)** Ongoing
B) Continue to develop, implement and test backup and restoration capabilities for both the server and the SQL Server database. Apply service packs and patches as appropriate.		**B)** January 2009	**B)** Ongoing
C) Enhance routine, automated QA/QC processes to the database. Initial screening tools have been completed. Continued evaluation is needed to eliminate questionable data. Also need capability to test and apply to historic data.		**C)** January 2009	**C)** Ongoing
D) Continue to develop and enhance the QA/QC database in collaboration with staff.		**D)** July 2008	**D)** Ongoing
E) Continue to develop the station journal database and		**E)** January 2010	**E)** Ongoing

Task	Participants	Estimated Start Date	Estimated Completion Date
applications, including creation intranet browsing tools. **F)** Continue to develop desktop data management tools. Enhance plotting capabilities. Link time series and QA/QC and Station Journal databases. **G)** Continue to document and maintain infrastructure. **H)** Add new sensors to the database as needed		**F)**January 2010 **G)** January 2010	**F)** Ongoing G) Ongoing
Improve Field Data Communications. This task includes: **A)** Work to eliminate use of Corsica polling computer and transfer its functions to Einstein. **B)** Continue to develop, test and enhance intranet/ internet components. **C)** Develop and implement as feasible procedures, practices and standards for supporting the reliability of field system data systems.	**MWQP Program**	**A)** February 2009 **B)** January 2011 **C)** July 2011	**A)** Ongoing **B)** Ongoing **C)** Ongoing
Provide timely access to current QA/QC'd SWP operations data i.e. conduct QA/QC on historical data and remove inconsistencies and gaps.	**OCO**/Office of Reconciliations	na	Ongoing
Development and enhancement of MWQP data dissemination products, **A)** As needed, add new stations	**MWQP Program**	**A)** na	**A)** Ongoing as

Task	Participants	Estimated Start Date	Estimated Completion Date
& sensors to the website or daily summary table.			needed
B) As needed, enhance the website presentation.		**B)** na	**B)** Ongoing as needed
C) Enhance procedures for emailing the daily summary report.		**C)** na	**C)** Ongoing as needed

na = not applicable or available

Table 14. Urban Investigations Deliverables and Timelines

Deliverables	Participants	Estimated Start Date	*Estimated Completion Date
Storm event sampling at 11 sites in the Lathrop study area	**MWQP Program MWQP Field Group**	Winter 2009	July 2012
Analysis of samples as indicated above by DWR	**Bryte Laboratory**	Winter 2009	August 2012
Analysis of pesticide samples as indicated above through contract with Weck	**FGL Laboratory**	Winter 2009	August 2012
Analysis of bacteria samples as indicated above through contract with Weck	**Weck Laboratory**	Winter 2009	August 2012
Final Report	**MWQP Program**	September 2013	April 2014

Table 15. Sample design and sample frequency for nitrosamines, their precursors and protozoan pathogens.

Sampling information	**Sacramento River**		**San Joaquin River**	
	Nitrosamines, precursors and WWTP tracers	**Pathogens**	**Nitrosamines, precursors and WWTP tracers**	**Pathogens**
Sampling frequency	At least quarterly	Bimonthly	At least quarterly	Bimonthly
Upstream of WWTP	One composite, midwater trawl	One composite, sub surface trawl, 1 meter below surface	One composite midwater trawl	One composite, sub surface trawl, 1 meter below surface
At WWTP	One sample of the effluent plume collected by submerged intake. Effluent sample provided by WWTP may be substituted for diffuser sample.	One sample of the effluent plume collected by submerged intake line	Effluent sample provided	Effluent sample provided
Downstream of WWTP	One composite midwater trawl sample	One composite, sub surface trawl, 1 meter below surface	One composite midwater trawl sample	One composite, sub surface trawl, 1 meter below surface

Table 16. NDMA/Crypto/Giardia Deliverables and Timelines

Comment: The next phase of the study only applies to the 2011-2012 pathogens portion. The 2008-2012 papers are the ones currently being written by MWD and should be submitted to a journal soon.

Deliverables	**Participants**	**Estimated Start Date**	**Estimated Completion Date**
Final Report (2008-2010 NDMA study) On hold for final report no staff to support. Hiring of independent contractor may be necessary to help guide next	MWQP staff MWDSC staff	August 2010	Submit March 2013 .

Deliverables	Participants	Estimated Start Date	Estimated Completion Date
phase of study.			
Paper for Publication (2008-2010 NDMA study) On hold for final report no staff to support. Hiring of independent contractor may be necessary to help guide next phase of study.	MWQP staff MWDSC staff	June 2012	June 2013
Quarterly and monthly sampling at up to 9 sites in the Sacramento-San Joaquin Delta. On hold no staff to support. Hiring of independent contractor may be necessary to help guide next phase of study.	MWQP staff MWQP Field Group	January 2011	January 2013
Analysis of samples On hold no staff to support. Hiring of independent contractor may be necessary to help guide next phase of study.	Bryte Laboratory MWDSC Laboratory BioVir Laboratory American Water	January 2011	February 2013 for pathogens, abundance and infectivity; analysis of the genotyping on hold for next phase of study
Final Report (s) Nitrosamine and Pathogen studies will have separate reports. On hold no staff to support. Hiring of independent contractor may be necessary to help guide next phase of study.	MWQP staff MWDSC staff	February 2013	On hold no staff to support.
Paper(s) for Publication Nitrosamine and Pathogen studies will have separate papers On hold no staff to support. Hiring of independent contractor may be necessary to help guide next phase of study.	MWQP staff MWDSC staff	January 2014	On hold no staff to support.

1.1

Table 17. O'Neill Forebay Circulation Deliverables and Timelines – Phase 1

Deliverables	Participants	Estimated Start Date	Estimated Completion Date
Phase 1 Analyze historical EC patterns at Banks PP, Delta Mendota Canal station, O'Neill Intake, and SWP Check 13. Complete paper study report of short circuiting.	**MWQP Program**	February 2012	October 2012
Hold briefings with TAC and to determine next phase of study. Hiring of independent contractor may be necessary to help guide next phase of study.	**MWQP TAC**	October 2012	December 2012

na = not applicable or available

1.2 Based on the new schedule, the final report will not be completed before May 2013.

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Table 18. FDOM Deliverables and Timelines

Deliverables	Participants	Actual or Estimated Start Date	Actual or Estimated Completion Date
Fluorometer installation	**MWQP**	August 2011	September 2011
Mid-study Progress Report	**MWQP**	November 2012	December 2012
Final Report	**MWQP**	May 2013	December 2013

1.3

Table 19. Spectrofluorometer Deliverables and Timelines

Deliverables	Participants	Estimated Start Date	Estimated Completion Date
Approximately monthly sampling at sites in the Delta study area	**MWQP Staff** **MWQP Field Unit**	Sept. 2010	Dec. 2012
Spectrofluometric analysis of raw and filtered water samples	**MWQP Staff**	Sept. 2010	Dec. 2012
Laboratory analysis of samples	**Bryte Laboratory** **MWD Laboratory** **Weck Laboratory**	Sept. 2010	Dec. 2012
Interim report	**MWQP Staff**	Nov. 2011	Dec 2012
Final Report	**MWQP Staff**	Feb. 2013	June 2013

1.4

Table 20. WARMF Model Monitoring Deliverables and Timelines

Deliverables	Participants	Estimated Start Date	Estimated Completion Date
Conduct monthly monitoring and stormwater sampling in the East Side Streams and Yolo Bypass	**MWQP**	August 2010	September 2013
Provide ESS and Yolo Bypass data to BDO	**MWQP**	Available on WDL	November 2013 Available on WDL

1.5

Table 21. Monitoring Upstream Sacramento River Deliverables and Timelines

Deliverables	Participants	Estimated Start Date	Estimated Completion Date
Feasibility and cost analysis report on portable station construction.	**MWQP**	Late Fall 2012 (Depends upon MWQP Field Unit schedule)	Early Spring 2013 (Depends upon MWQP Field Unit schedule)

1.6

Table 22. MWQP Program Summary Report Deliverables and Timelines

Deliverables	Participants	Estimated Start Date	Estimated Completion Date
Convert all MWQP reports to pdf,	**MWQP**	June 2010	Completed
Compile bibliography and begin outline of program accomplishments and key findings.	**MWQP**	August 2010	Completed
Prepare draft report and send out for comments.	**MWQP**	September 2010	Completed
Prepare final report	**MWQP**	January 2012	October 2012.

1.7

Table 23. Tidal Marsh Restoration Literature Review Deliverables and Timelines

Deliverables	Participants	Estimated Start Date	Estimated Completion Date
Gather literature for all Tidal Marsh/DBP production journal articles.	**MWQP**	August 2011	Completed
Prepare draft paper	**MWQP**	July 2012	January 2013
Prepare final paper	**MWQP**	March 2013	August 2013
Investigate study potential	**MWQI TAC**	October 2013	TBA

1.8 Molecular Characterization of Organic Disinfection By-Product Precursors of Delta Soils. Lead Investigator: Theodore Swift

Deliverables	Participants	Estimated Start Date	Estimated Completion Date

Table 24. Sanitary Survey Update Deliverables and Timelines. (Note that all tasks up to the actual completion of the Report were completed in FY 2010-11).

Deliverables	Participants	Estimated Start Date	Estimated Completion Date
Determine SS update topics drinking water contractors want in the update	**MWQP/Sanitary Survey Subcommittee**	February 2010	Completed
Meet with DPH to propose contractor topics and determine topics DPH wants investigated in update.	**MWQP/Sanitary Survey Subcommittee/CADPH**	March 2010	Completed
Sanitary Survey Subcommittee determine format for RFP or RFQ	**MWQP/Sanitary Survey Subcommittee**	April 2010	Completed
Prepare RFP or RFQ	**MWQP/**Sanitary Survey Subcommittee	April/May 2010	Completed
Send out RFP or RFQ	**MWQP/**Sanitary Survey Subcommittee	July 2010	Completed
Selection process	**MWQP/**Sanitary Survey Subcommittee	August 2010	Completed
Contract negotiation (if RFQ) and contract initiation	**MWQP/Sanitary Survey Subcommittee**	October 2010	Completed
Consultant prepares SS update	**Archibald Consulting/MWQP/Sanitary Survey Subcommittee**	December 2010	June 2012
Consultant submits publication to CDPH	**Archibald Consulting/MWQP/Sanitary Survey Subcommittee**	na	June 2012
Preparation of Action Plan Items	**Archibald Consulting/MWQP/Sanitary Survey Subcommittee/All interested SWC**	Spring 2011	July 2012
Finalization of Action Plan	**Archibald Consulting/**	July 2012	September 2012

Table 25. Emergency Response Deliverables and Timelines

Deliverable	Participants	Estimated Start Date	Estimated Completion Date
Identify and review all DWR emergency response plans and processes that should consider potential drinking water quality impacts during an emergency.	**MWQP** O&M WQ O&M Field Divisions DPLA	November 2008	Original Draft completed Dec 2008. Management reviewed and returned to staff Oct 2009. During 2nd revision new information was found. An inquiry into SWRCB roles during emergencies started in Dec 2009. 2nd revision draft sent to DES upper management end of Mar. 2010. Following re-submittal and approval by DES upper management, report will be resubmitted to affected divisions. Following all internal review, recommendations will be submitted for consideration of Executive Management.
Identify water quality staff and material resources for responding to various emergency scenarios.	DWR Emergency Management Committee (EMC)	November 2008	Ongoing-Dependent on DWR EMC contacting appropriate division heads to direct the assignment of their staff and resources to this effort
Participate in emergency response meetings (i.e. CUWA emergency spill taskforce).	**MWQP**	November 2008	Ongoing